

REMARKS**I. STATUS OF CLAIMS**

Claims 1-64 are pending, of which claims 1, 21, 40, and 58 are in independent form.

Claims 10-11, 30 - 31, 49-50, and 62 are objected to because of informalities.

Claims 21-39 are rejected under 35 U.S.C. § 101.

Claims 1-8, 11-17, 20-28, 31-37, 40-47, 50-55, 58-61, and 63 are rejected under 35 U.S.C. § 102(b).

Claims 9-10, 18-19, 29-30, 38-39, 48-49, 56-57, 62, and 64 are rejected under 35 U.S.C. § 103(a).

Independent claims 1, 21, 40 and 58 have been amended to further distinguish the claimed subject matter from the cited art. The independent claims have been further amended to delete the preamble which Applicants believe is not necessary to particularly point out the claimed subject matter.

Independent claim 21 has been further amended to overcome the rejection under 35 USC 101.

Claims 10, 30, 49 and 59 have been amended to overcome the informality rejection.

Claims 11, 31, 50 and 58 have been amended to overcome the informality objection

Dependent claims 9, 29 and 48 have been amended to describe reliability management and congestion control to facilitate multicast transmission of data packets to receivers.

Applicants respond to the indicated Paragraphs of the subject Office Action, as follows

II. RESPONSE TO CLAIM OBJECTIONS

A. Paragraphs 1 and 2:

Claims 10, 30, 49, and 62 have been amended to include reference characters ACL in parentheses and overcome the objection. Withdrawal of the objection is requested.

Claims 11, 31, 50, and 58 have been amended to include reference characters NACK in parentheses and overcome the objection. Withdrawal of the objection is requested.

III. CLAIM REJECTIONS - 35 U.S.C. § 101

A. Paragraphs 3 and 4:

Claims 21-39 have been amended to describe a computer readable medium including program code, executable in a computer system. The amended claims describe a tangible product protectible as statutory subject matter. Withdrawal of the rejection of amended claims 21-39 under 35 USC 101 is requested.

IV. CLAIM REJECTIONS - 35 U.S.C. § 102(b)

A. Prior Art Considerations:

USP 6,141,785 to C.H. Hur et al, issued October 31, 2000 (hereafter "Hur") discloses error detection and error correction in a communication group composed of a small number of data sources and multiple receivers. The sources recognize data transmitted and received by sequence number for each data packet. A heartbeat is included in the last packet and provides an indication of the presence of the source. A receiver detects the loss of a packet by

checking the gap between sequence numbers, and identifies damaged packets by checking the check sum of the data packet. The receiver periodically sends a heartbeat message to the source to inform the source of the last message received. The receiver detects lost packets by tracing the packet sequence numbers. If the receiver confirms lost packets or one or more packets is damaged a negative acknowledgement (NACK) is sent to the source for re-transmission of the data.. The NACK is transmitted through an IP-Multicast group. In cases where the source can not re-transmit the other hosts in the group re-transmit the data and the source transmits a heartbeat message.

In contrast, applicant discloses a multicast communication system wherein a single sender sends a communication to multiple receivers using Asynchronous Layered Coding (ALC) and negative acknowledgement (NACK)-Oriented Reliable Multicast (NORM) protocols. ALC protocol is a proactive Forward Error Correction (FEC) based scheme that allows receivers to reconstruct mangled packets or packets that have not been received. ALC protocol uses FEC encoding on multiple channels, allowing the sender to send data at multiple rates (channels) to possibly heterogeneous receivers. NORM repairs damaged packets or packets that have not been received and incorporates the use of FEC on a per-packet basis for. A receiver sends an acknowledgment or transmission of a missing or mangled data to the sending device or to another receiving device. A retransmission of missing or mangled data is sent by the sender or another receiving device

In Hur the original data as well as the retransmissions are done by the source or by the hosts. Hur does not teach that other receiving devices can make retransmissions of missing or mangled data. Nor does Hur teach NORM that allows receivers to reconstruct mangled packets or packets that have not been received.

B. Paragraphs 5 and 6:

Claims 1-8,11-17, 20-28,31-37,40-47, 50-55, 58-61, and 63, as amended, include features not disclosed in USP 6,141,785 to C.H. Hur et al, issued October 31, 2000 (hereafter Hur) and overcome the rejection under 35 USC 102 (b) , as follows:

1. Independent Claim 1 is as follows:

(i) transmitting a data packet from at least one sending device to at least one receiving device at different rates and in different channels ;

The Examiner cites Hur at column 4, lines 17-21 transmitting data packets to at least one receiving device. The claimed feature has been amended to include transmitting data packets at different rates and channels, as described in applicants specification at Paragraph 0049. The Examiner in the consideration of claims 9, 28, and 47 contends that the publication by Rocca and Mordelet at Sections 4.2 and 5.2 disclose the claimed feature. The cited Sections describe How to Deal with Multiple Objects and Tests Methodology. Applicants can not find a hint in the cited sections or the publication as a whole related to transmitting packets in different channels and at different rates.

ii) determining at said receiving device missing or mangled data transmitted from said sending device and repairing or placing packets using negative acknowledgement (NACK)-Oriented Reliable Multicast (NORM) protocols at the receiving device;

Applicants can find no disclosure where a receiver repairs packets using NORM as described in applicants' specification at Paragraphs 0006 and 0058.

(iii) sending an acknowledgement or transmission of missing or mangled data from said receiving device to said sending device or to another receiving device;

The Examiner contends that Hur at column 6, lines 54-57 discloses the claimed subject matter. The cited text discloses that the receiver can request re-transmission by transmitting a NACK through an IP-Multicast group of hosts or sources . The cited text does not disclose sending an acknowledgement to other receivers as described in applicants' specification at Paragraph 0037.

(iv) ~~receiving~~ transmitting a retransmission of said missing or mangled data from said sending device or said other receiving device to complete the data packet and a data transmission session.

The Examiner contends that Hur at column 6, lines 60-61 discloses the claimed subject matter. The cited text discloses other hosts or sources in a multicast group re-transmit the data. Applicants submit that hosts or sources in a multi-cast group do not equate to other receivers re-transmitting the data as described in applicants ' specification at Paragraph 0037..

Summarizing, Hur fails to disclose (1) transmitting packets in different channels at different rates; (2) using NACK and NORM protocols to repair damaged or replace packets at the receiver, (3) a receiver transmitting a NACK to another receiver as well as to a sender, and (4) transmitting a re-transmissions from another receive or a sender .

The rejection of claim 1 under 35 USC 102 (e) or 103 (a) is without support in the cited art by the failure of Hur to disclose the features (1)–(4) described above. Withdrawal of the rejection and allowance of claim 1 are requested.

2. Independent claims 21, 40 and 58

Claims 2, 40 and 58 have been amended in the same or similar manner as claim 1

Claims 21, 40 and 58 are distinguishable from and patentable over Hur by the failure of Hur to provide the features (1) – (4) described above. for claim 1.

Withdrawal of the rejection and allowance of claims 21, 40 and 58 are requested.

3. Dependent Claims 2-8, 11 -17, 20, 21-28, 31-37, 41-47, 50-55, and 59-61

Applicants defer response to the rejection of the subject dependent claims until the independent claims 1 and 21 are acted upon. In any case, the subject dependent claims further limit the independent claim from which they depend and are patentable over the cited art for the same reasons indicated for the independent claim from which they depend.

V. CLAIM REJECTIONS - 35 U.S.C. § 103

A. Prior Art Considerations:

1. A publication entitled “Design of a Multicast File Transfer Tool on Top of ALC” by V. Rocca and B.Mordelet, Proceedings of the Seventh International Symposium on Computer and Communications (ISCC’02), March 11, 2002, pages 1-6 (Hereafter, Rocca and Mordelet) discloses an efficient multicast file transfer tool. An Application Level Framing (ALF) paradigm reduces memory requirements at a receiver and can hide computation behind a communication tool. As background the publication describes ALC for reliable transmission of files using Layered Coding Transport; Layered Congestion Control, Building Blocks and Forward Error Coding.. The authors propose ALF as superposed on ALC to improve the overall performance of the tool and provide several object and symbol ordering schemes that improve transmission efficiency and reduce memory requirements. Section 4.2 of the publication discusses How to Deal with Multiple Object and discloses methodologies for managing objects

by various combinations of transmission scenarios and symbol organization. Section 5.2 of the publication summarizes tests performed showing the various combinations between the transmission scenario and symbol organization.

Applicants can find no disclosure or suggestion in the publication related to ALC or ALF providing multicast transmissions in different channel or different rates. Moreover, there is no disclosure in the publication of an “active ALC mechanism” wherein a sending device defines unidirectional transmission block identifiers and corresponding objects before transmitting data to the receiving device, as described in applicants’ specification at Paragraph 0015.

2. Paragraphs 7 and 8::

Claims 9-10 , 29-30, 48-49 and 62 include features not disclosed or suggested in Hur in view of the Rocca and Mordelet publication and overcome the rejection under 35 USC 103 (a), as follows:

Applicants have demonstrated in Sub-Paragraph A above there is no disclosure in the cited art regarding reliability management/congestion control for multicast transmission or an active ALC mechanism, as described in applicants specification at Paragraphs 0039 and 0015.

The rejection of the subject claims is without support in the cited art. In any case, the claims further limit the independent claim from which they depend and are patentable on the same basis as their related independent claim

Withdrawal of the rejection and allowance of Claims 9-10 , 29-30, 48-49 and 62 are requested.

B. Prior Art Considerations

USPAP 20050053094 to J. Cain et al, published March 10, 2005., filed September 9, 2003 (Hereafter, Cain) discloses a mobile ad hoc network that provides quality-of-service (QOS) based on unicast and multicast transmissions. A plurality of nodes include a wireless communication device and connected controller, the wireless devices providing selectable signal pattern for implementing unicast and multicast transmissions. The controller operates in accordance with a multi-layer protocol hierarchy. At an upper layer the controller may establish QOS threshold for data transmissions. Paragraph 0030 of Cain discloses the wireless device may include various wireless modems, Local Area Networks, cellular telephone devices, etc.

Applicants can find no disclosure of GPSR, WLAN, DVB networks in Cain, although applicants acknowledge that such networks are well known.. However, there is no disclosure or suggestion in Cain, Hur or the Rocca and Mordelet publication, alone or in combination, of providing reliable multicast transport of data in GPSR, WLAN, DVB networks.

1. Paragraph 9:

Claims 18-19, 38-39, 56-57, and 64 include features not disclosed or suggested in Hur in view of Cain, and overcome the rejection under 35 USC 103 (a) as follows;

The Examiner has not identified in Cain or Hur or the Rocca and Mordelet publication of providing reliable multicast transmission in GPSR, WLAN, DVB networks by way of 1) transmitting packets in different channels at different rates; (2) using NACK and NORM protocols to repair damaged or replace packets at the receiver (3) a receiver transmitting a NACK to another receiver as well as to a sender, and (4) transmitting a re-transmissions from another receive or a sender. The rejection of the subject claims under 35 USC 103 (a) is without

support in the cited art., In any case, the subject claims are patentable on the same basis as the respective independent claim from which they depend.

Withdrawal of the rejection and allowance of claims 18-19, 38-39, 56-57, and 64 are requested.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 4208-4172.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No 13-4500, Order No. 4208-4172.

Respectfully submitted,
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